

Appl. No. 10/654,824

Reply to Office action of Dec. 22, 2004

Remarks

Claims 9 and 11 were amended to state a relationship between the claimed devices and the rail of claim 1, in accordance with the Examiner's request. Claim 7 was amended to include the 2° to 22° angle disclosed on page 4, line 3 of the specification. Claims 10, 12, and 14 were canceled in view of an earlier restriction requirement. New claims 15-22 were added to better distinguish applicant's invention from the cited prior art. The amended claims are supported by specification and claims as originally filed and do not include any "new matter".

The Office Action rejects the claims on the basis of various references, but such are not close to what the present invention provides in terms of intelligent communication. None of the references discloses a display capable of changing an intelligent message from a remote location. Neither can any send a return signal containing voice recognition, bar code data, radio frequency identification data or display data to the home computer. A DVD disk accompanies this reply to show the product which has been built on the foundation of this invention.

The Office Action rejected claims 1-5 under 35 U.S.C. 102(b) as anticipated by Mizuno JP 2001-34214. Mizuno discloses a delineator mounted in a recessed part 25 of a guard rail 20 without projecting therefrom. The device provides delineation for traveling vehicles by flickering light elements 5 within a main body case 1. The light elements are connected with solar batteries and an electrical storage body. The flickering light elements merely reveal the presence of the guard rail to oncoming vehicles without displaying an intelligible message or sign.

The main body case 1 is mounted onto the beam 24 by means of inwardly extending lock bolts fixed to a vertical strut or post 21 (Figure 8). This mounting means does not permit Mizuno's case

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1 to be angularly adjustable on the guard rail 20. Mizuno's guard rail does not have end brackets for connection with supporting end posts.

Thus, Mizuno has flickering lights powered by solar batteries attached to center of guardrail.

In contrast, the present invention is an intelligent sign that can transmit custom messages by the author at his command with desired time duration. The author not only can send a simple message but also a group of messages to one sign or many signs. The message can be timed for duration and scheduled for a pre-determined time. The messages can scroll or be broadcast in a variety of presentations, such as bottom up, top down, middle out. The supporting computer system time is broadcast and in sync with the display.

The display of the invention can be powered by solar with battery backup but also directly from available commercial house power. The display not only broadcasts the sender's message but can return a signal to the sender. This return signal can be the message from voice recognition, bar code information, radio frequency identification information, as well as what is currently being broadcast on the display. Mizuno non-captive rail cannot accommodate various angles of display and it appears from Mizuno that he mounts his device even with rail face, i.e. not recessed like the captive rail of the present invention.

The present invention is supported by captive unique software that communicates directly to the sign via hardware or wireless technology. No software is involved with Mizuno, just a flickering drive circuit.

Mizuno does not have an audio buzzer to alert the user that a new message will be appearing.

Thus, Mizuno is not a message display imbedded in a

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guardrail such as is the present invention. Mizuno is not a intelligent display supported by captive software that can change messages from a remote location. Mizuno is not computer activated and the rail is not captive to its luminous type delineator.

Claims 1-4, 8, 9, 11, and 13 were rejected under 35 U.S.C. 103(a) as unpatentable over Jones U.S. 6,107,941, in view of Attwood U.S. 3,468,567. Jones discloses a traffic control system 20 including a sign 44 below three sign lights, all mounted on a pole 48. The system is not in, around, about, or otherwise associated with a guardrail. The stationary sign 44 has traffic warning information on one side 44a thereof. The sign 44 includes a stationary, non-electronic message that is not changeable from a remote location.

Jones' system has a battery-powered control panel 58 connected with an antenna 64. Upon receiving a signal from a remote location the control panel 58 delivers power to the three lights without affecting the sign 44. The control panel 58 also operates an audible alarm 62 that sounds responsive to a signal from a remote location (col. 5, lines 44-59).

Thus, Jones is a stationary sign with signal lights and is not in, around or about a guardrail. It has a physical, stationary sign with a pre-labeled message that is not changeable from a remote location. Jones has three lights with tinted lens similar to traffic light and can be electrified by solar or commercial power. Lights are activated by a programmable central panel that uses sensor and wireless commands to activate the light. Jones's alarm sounds continually during a signal light event.

The present invention is an intelligent, electronic display embedded in a protective guardrail. The invention can change

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sign message instantly or schedule for future broadcast. Its buzzer activates at the beginning of each new message and remains mute until a new signal is sent to the display.

The invention can power its guardrail embedded sign by commercial house power or solar with battery backup. The message can scroll, move left to right, open from bottom up and all messages are self-lit. The sign is not lit from an internal light source as in the Jones unit.

Jones invention is not embedded in a guardrail. Jones sign cannot be changed instantly from a remote location. Jones activates signal lights in conjunction with an alarm that lasts through the duration of the activated signal light.

Jones invention has nothing to do with activating a message changing electronic display embedded in a guardrail. Jones sign cannot send voice activation, bar codes, radio frequency identification and current display now playing signals back to the controlling computer.

Attwood U.S. 3,468,567 claims a fastening clamp 10 for adjustably supporting a vertical upright 12 behind a permanent highway barrier 14. The clamp 10 includes a body 16 interconnected with upper and lower arms 18, 20 each defining a rectangular opening 34 for a tubular member 70. An upright post 72 telescoped within the member 70 supports a stationary, non-electronic sign carrying a fixed message such as "STOP AHEAD". The sign is located behind the barrier 14, alongside support posts 15 (Fig. 4).

Thus, the Attwood invention is a stationary, pre-labeled sign post fastened with brackets to support column side of the guardrail.

The present invention can show a changeable intelligent message by the sender from a remote location. The sign is

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powered directly from a commercial house power source or from solar with battery backup. Communication to the sign can be from hard wired connection or a compatible wireless connection. The invention can change messages, duration of messages or present one or many signs from a remote location. i.e. sender does not have to be physically at sign to change messages.

Attwood's stationary sign is attached with tubes and tubular material to the backs of the rail where the support columns affix to the rail. To change the Attwood's sign message, another pre-labeled sign would have to physically be put in place. Attwood's signs are not lit and can only be seen if an external light source shines on the sign. The signage is not embedded in the guardrail.

In summary, Attwood sign message is unable to be changed from a remote location. Message is limited to the size of the physical sign. Sign is not lit. Sign is not embedded in guardrail. Guardrail is not captive to Attwood as in the present invention. Attwood's signs are vertical and not angled for better visibility.

Claims 1-9, 11, and 13 were rejected under 35 U.S.C. 103(a) as unpatentable over Gehrig U.S. 4,723,758 in view of Jones, as applied earlier. Gehrig shows a plastic safety covering 1 for attachment to guard rails. The safety covering 1 includes two bulges 2 protruding forwardly toward a roadway on upper and lower sides of a groove 3. An especially high reflective zone 6 is positioned in the center of the groove, embedded in the covering.

Groups of signal surfaces 10 positioned in the groove 3 bear "one-way" or "do not enter" signs or symbols alerting drivers to highway driving mistakes posing a danger to them (col. 3, lines 15-36). As acknowledged in the Office Action, Gehrig's plastic safety covering device is not electronic. Gehrig states his

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signal surfaces 10 are inclined less than 90° to the travel direction of a wrong-way driver (col. 3, lines 33-35).

Thus the Gehrig invention is unable to send changeable, intelligent messages. This invention displays no letters, numbers or other decipherable messages. This invention has a reflective color plastic safety covering attached to the center groove of the guardrail that does not display a message or a two sided safety covering mounted to the U-shape trough of the guardrail that does not display a message. Gehrig does not have a captive guardrail as in the case of the present invention. Gehrig Fig.1 reflective material cannot be angled for better visibility; Fig. 2 Elements are flush with face of guardrail.

The present invention can send a changeable intelligent message from a remote area. The display can be supported by command house power or by a battery backup solar power supply. The changeable display messages can be sent or changed by a computer hard wired to the display or by wireless means.

The messages of the present invention can be displayed in scroll, left to right, down to up or middle out formats. The present invention can activate a buzzer at the beginning of each message.

In summary, Gehrig is not capable of delivering intelligent messages. Gehrig is limited to reflective material attached to guardrail. The only way this reflective material can be seen is with an external light source shining on the reflective material in the guardrail. Gehrig cannot send voice activation, bar code, radio frequency identification or display signals back to the host computer. And, Gehrig rail is not captive to his invention.

Principal claims 1 and 15 of the present invention define applicant's electronically enhanced guardrail in terms distinguishing the invention from the cited references, whether

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considered singly or in any valid combination. Claim 1 requires a guardrail comprising a rail and an electronic display mounted on the rail. Mizuno and Jones both include electric lights in their devices, but neither reference discloses an electronic display. The signs shown in Gehrig and Attwood are simple mechanical structures, not powered by electricity.

New principal claim 15 further limits the invention by stating that the electronic display is mounted in a concave section of the rail, the face of the display is recessed into the rail a protective distance from the front of the convex sections, and the display face electronically displays a message. Mizuno's light elements 5 merely provide a means for visually recognizing his guard rail 20, without providing an intelligible electronic message. Although Mizuno's light elements 5 are mounted in a recessed part 25, the elements are not displaced inwardly from the beam 24 to provide protection from fork lift trucks and other impacts.

Several dependent claims further differentiate applicant's electronically enhanced guardrail from the cited art. Thus, claim 2 identifies the electronic display to be a message display, whereas Mizuno and Gehrig are simply visual attention-attractors. Claim 3 insets a protective distance, whereas Mizuno and Gehrig definitely do not. Claims 6 and 18 state that the display is mounted for angular adjustment of the face relative to the rail. Claims 7 and 19 specifically require that the angle of the face to the rail is about 2 to 22 degrees. Gehrig is the only reference of record mentioning angular inclination of a sign. Gehrig's signal surfaces 10 are "inclined less than 90° to the travel direction of the wrong-way driver" (col. 3, lines 33-34). Applicant's invention of inclining an electronic display upwardly to improve visualization by lift truck drivers is

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different from rotating Gehrig's signal surfaces 10 about their vertical connections with the groove 3 of his safety covering. Gehrig's signal surfaces 10 are always perpendicular to the ground, even after they are rotated. Claims 7 and 19 require applicant's display face to vary by 2 to 22 degrees from perpendicular. In the embodiment disclosed at page 15, lines 22-23 and in Fig. 1B, applicant's display face is at a preferred angle of 15° from perpendicular. Mizuno's fixed lock bolts 22 do not appear to permit inclining his body case 1 to the front of the beam 24. Attwood's signs and Jones's traffic control system are in fixed vertical positions. The invention of dependent claims 6, 7, 18, and 19 should be allowable over any valid combination of Gehrig with the other references of record.

Dependent claim 8 further limits claim 1 by requiring computer controllable information on the display. Amended claim 9 states that the guardrail includes a bar code scanner and/or an RFID scanner for transmitting information to a computer connected with the display. New claim 21 requires the display to include a scrolling message sign. Claim 22 states that the message on the display is commanded by a computer connected with the display either via wire or wirelessly. Jones mentions that his traffic control system includes a "programmable" central control panel 58 for warning pedestrian traffic upon activation of lights. However, his programmable control panel is only connected with three lights, not with an electronic message display or a scrolling message sign. Jones' sign 42 is fixed; Mizuno's flickering light elements do not reveal an intelligible message; and all of the signs in Gehrig and Attwood non-electrical. Claims 8, 9, 21, and 22 are clearly allowable over Jones alone or in combination with other cited references.

Amended dependent claim 11 requires a voice-recognition

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module for transmitting information to a computer associated with the display. The Office Action asserted it would have been obvious to have used a voice recognition module with Jones in order to ease operation by a handicapped person. Jones does not mention operation of his apparatus by handicapped persons. The Examiner's assertion is inconsistent with operation of the Jones system by a mobile transmitter sending a wireless signal to a receiver associated with the central control panel (col. 5, line 60 to col. 6, line 8). Neither Jones nor any other reference of record suggests substitution of a voice recognition module for Jones's antenna 64 and receiver 58a. Amended dependent claim 11 is clearly allowable over Jones and the other references.

New dependent claim 16 recites a mounting bracket at an end of the rail for mounting to a post. Dependent claim 17 requires mounting brackets at opposed ends of the rail, fastening the rail to posts. The features of dependent claims 16 and 17 facilitate angular adjustment of the face of electronic display 12 as shown in Figs. 2 and 3 and as described on page 10, lines 7-20 of the specification. Gehrig is the only reference of record mentioning angular inclination of signal surfaces, and his safety covering constitutes a plastic shape of uniform cross-section, without any end brackets. Claims 16 and 17 are allowable over Gehrig, considered alone or in combination with other references of record herein.

Claims 23 to 25 have been added to specify that the message under computer control includes the written equivalent of a word or words of a spoken message. The specification has been correspondingly amended on page 6. New matter is not involved, since it is inherent in the disclosure, particularly the examples given on page 6, that the message can be of this character. None of the references Mizuno, Gehrig, Jones or Attwood involve

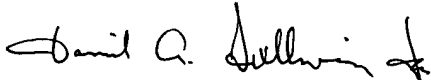
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messages of this character under computer control.

Applicant requests early notice of allowance of the amended claims.

Respectfully submitted,



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